Rishi Valley Experiment in Ecological Regeneration and Environmental Education

A Compilation

S.Sridhar

Percolation Tank with Rishi Konda in the Background

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R R Chari

Smt. Uma Prabhu planting a sapling

R R Chari

Shri Suresh Prabhu planting a sapling

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Acknowledgement

In the documentation of the bird wealth and floral richness of Rishi Valley - an ongoing task which began in 1990 and made possible the publication of "Birds of Rishi Valley and Renewal of Their Habitats" in 1994, in the declaration of Rishi Valley as a Bird Preserve in July 1991, and in the launching of the Home Study Course in Ornithology in May 1997 - the first of its kind in the country for promoting Environmental Education with birds in focus, I have received encouragement, support and participation, in ample measure and in diverse ways, from the Management of Rishi Valley Education Centre and several activist friends committed to the cause of biodiversity conservation and protection.

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S. Rangaswami
Head of the Department &
Hony. Chief Warden, Rishi Valley Bird Preserve

Part I

Workshop on

Biodiversity Conservation

held at Rishi Valley

28th – 30th December 1998

One of us asked Krishnamurti what his educational objectives were. We were not sure whether he would answer us, as he did not think in terms of aims and goals.

To our great surprise, he enumerated the following as his educational aims.

Global outlook : *Krishnamurti explained that this meant a vision of the whole as distinct from the part, and that it should never be a sectarian outlook but always a holistic outlook free from all prejudice. He said that only a global approach could solve our problems, placed as we were at the end of the twentieth century, with unknown dangers from nuclear energy and hazardous wastes, population growth, environmental pollution, and wars. He said that a sectarian outlook would invariably lead to bigotry and violence.*

Concern for man and the environment : *Krishnamurti said that man was part of nature, and if nature was not cared for, it would boomerang on man. There was need for afforestation and conservation of soil, Ecologists were pointing out that the destructive nature of man had led to the disappearance of many species in the biosphere. Man was suffering and was confused. There were conflicts of all kinds, leading to violence and wars. He said that only right education and deep affection between people, which was needed everywhere would resolve many human problems.*

Religious spirit, which includes the scientific temper : *Krishnamurti told us that the religious mind is alone, not lonely. It is in communion with people and nature. He said that the religious spirit is young and innocent and can explore into the present with creative zeal. While the scientific mind goes from fact to fact and observes, the religious mind alone could comprehend the fact and go beyond it from the known to the unknown. He said that only the nonsectarian and nondenominational religious spirit would bring about a new culture.*

There was a radiance in the room as he spoke

From **As the River Joins the Ocean—** ***Reflections About J. Krishnamurti,*** *by G. Narayan*
Published by Book Faith India, 1998

Welcome address

Dr. Radhika Herzberger

Shri Suresh Prabhuji, Smt. Uma Prabhu, Dr. Vandana Shiva, Shri Vijayaraghavanji, Colleagues and Students

I would like to welcome you all to this workshop on bio-diversity conservation. The subject is close to my heart; for the past fifteen years or so; ever since I have been at Rishi Valley, it has occupied my thoughts.

I will begin with a quotation from the writer whose love of India expresses itself in the following words: "The self-hood of India is so capacious, so elastic that it accommodates 1 billion kinds of differences. It agrees with its billion selves to call all of them India."

Rushdie alludes to a certain legacy of the Indian past, a legacy that has allowed myriad cultures to flourish right into the 20th century. Fifty years ago we adopted a Constitution that joined the future of this legacy with the rights of individuals. Do the two ideals flow into each other, or does one have to be down-graded? These are questions we have to ponder as we reach the end of the 20th century, and face certain tensions between the rights of groups to survive and the manner in which technology is overriding these rights. I will not be addressing these deeper questions. My concern today is merely to pose questions about the framework of our thinking.

Fifty-one years have passed since a five thousand-year-old civilisation was reborn as a nation called India. Two hundred years of colonial rule went into preparing for this new birth, two hundred years during which the Indian elite absorbed European thought through an educational system that had its roots in foreign values. The nineteenth century idea of progress, of a technologically advancing nation that brings prosperity and justice to its people by harnessing nature, continues to dominate our thinking. We have begun to accept the proposition that what is good for General Motors is good for the world. Our science curriculum, especially at the senior level, avoids discussion of the disastrous consequences that

follow when scientific discoveries are exploited by nations and business to further their own ends. Our humanities curriculum is essentially Western in the values it promotes: History as the glorification of the past, economics as an adventure into a prosperous future, dams as temples are the basic narratives around which we educate our young.

Under pressure of this ideology the civilisation that we inherited – the capacious and elastic India, able to accommodate a billion differences of Rushdie's dreams, is dying. Plastic is choking our lakes, our rivers are drying up, the earth is being polluted by industrial waste, our elephants, rhinos and tigers are becoming extinct, between four and five species of plants become extinct every week, and our forests, which were the source of our civilisation, are dying. In the context of the last years of the twentieth century we say that the Indian earth has not been served by the educational system

A vast new educational campaign will have to be launched to recover the India we have lost, the forests that were sources of ancient wisdom and the rivers that sustained it. We will have to learn to care for our meadows and the mountains.

The programme of re-schooling a billion people will have to begin with the privileged, who consume the bulk of India's resources. When *American Express* carried out a survey of spending-patterns of nationalities, it turned out that we Indians outspend many of the richest countries in the world.

We the teachers who are given charge of educating the elite will have to re-think the assumptions that underpin our system. With a helping hand from the government, we will need to re-structure our curriculum – from an individualistic perspective that exploits the earth to one that nourishes it. Our biology will have to deal with the interconnectedness of life; our chemistry curriculum will have to give prominence to notions of recycling waste and repairing damaged rivers. Our history will have to join hands with geography and biology to show that human beings are part of nature and dependent on it. Our economics will have to teach us that the earth's resources are limited and that we need to look critically at the ideas of development. And literature will have to develop in our

students a new sensibility, the ability to look at bald mountains with grave eyes.

Along with our students, schools will have to change. We need to take responsibility for our immediate neighbourhood. Public schools will have to modify their self-image. We can no longer remain ivory towers surrounded by stone walls. Instead we must become resource centres with thin walls and many gates. We will have to follow the example of the Doon School headmaster who inspired a young man to start the Tillonia project.

The five thousand years had left a unique legacy on a continent that nature has endowed with the most diverse species; culture imitated nature in preserving variety of human cultures. As the eminent historian D. D. Kosambi notes, the cultures with less advanced technologies have survived the onslaught of newer and more advanced technological cultures. India is the original multi-cultural society. It is also one of the longest surviving continuous cultures on earth. If one were to judge success in the biological and ecological perspective as survival, then indeed India's culture which did not allow a single species to become extinct up until the dawn of this very century was a triumphant achievement. Like the myriad species of plants and animals that make up the natural world, the many religions and races that inhabited one of the geographically most diverse continents, India's sub-castes formed interconnecting loops, competing and cooperating while forming complex webs of interaction that returned to the earth what it took from her.

It is therefore deeply ironical that one of the oldest surviving and multi-cultural societies on earth finds it difficult to define itself as a nation in the last decade of the 20th century. No less ironical is the fact that current definitions promoted by our political parties serve to deny the civilisational values they choose to celebrate in their nationalist enthusiasms. 'Hindutva,' a hybrid form derived by adding a Sanskrit suffix *tva* to a Greek nominal, will not create an essential property. More tragically, the notion that there is such an essential property or general idea that makes all Indians to be Hindus, is an illusion that will destroy the values India has stood for – tolerance for all religions and respect for nature.

An eminent Indologist described a spectrum of qualities that he associated with India's ancient civilisation: "When I have asked Indians their thoughts on the question of a vitalizing element in Indian civilization I have always had the answer that such an element certainly exists, but I have found difference of opinion as to what that element is. As simple an answer as I have ever received is that it is a special feeling for the sanctity of water. Such a feeling can be deduced from the elaborate bathing and drainage system of town planning and architecture in the Harappan culture, the reverence for the Cosmic waters of the Rig Veda, the use of ceremonial ablution in Hinduism, the veneration for streams and springs, and the other lesser religious practices and taboos associated with water." I would recommend a return to these values in our schools.

Welcome address

Dr. Vandana Shiva

Suresh Prabhuji, Radhika, Mrs Prabhu, Teachers of Rishi Valley, Teachers from other Schools and Students of Rishi Valley,

I feel specially happy that this workshop is taking place as planned earlier.

Literally during the whole of this year I have been trying to bring some of the biggest, hottest debates of our times to bear on school education. It has been my desire that schools respond from their diverse backgrounds and locations to the most dramatic changes that are taking place in the world. For me, biodiversity has only been another word for the 'extended family'. In our culture, we call it, VASUDEVA KUTUMBAKAM. But I have always seen biodiversity as a more technical term for a cosmology that believes in the interconnectedness of all species that need one another to survive. For a few centuries, a model of progress has made it look as if the earth exists for the benefit of man and that man could exploit the earth and push other species to extinction with no limit. Basically, the awareness of biodiversity is a way of remembering that we share the earth with other species and that we all owe to ourselves and to all other species to protect them.

One of the most tragical lessons on biodiversity management that strike me as particularly relevant is the salutary idea that the bounties of the earth are meant for all species. No single species should exploit the resources of the earth in a way that denies the right of the rest of the species to exist. We have been talking about human rights only. We must talk of the rights of all species on earth, the earth right to their well-being and their own internal development as nature has granted them. This was then converted to include human rights and human living. Good living means you don't live at the cost of other species.

If we consume more than we need, we are stealing from someone else; it could be an earthworm or could be a microbe or an insect that has maintained agriculture and the human society. The achievements of Rishi Valley in practical terms of rejuvenation and regeneration of its

ecosystem remind us that even when we are talking about soil and water conservation, what we are really conserving is biodiversity and through it soil and water. If the hill slopes adjoining the valley have not been replanted with diversity of flora we would not have achieved the regeneration of the water system that has taken place. It was a letter from Hans – for which I should thank him – about eucalyptus monoculture that made me realise that here was a school like this in Rishi Valley which grew interested in the debate between monoculture and diversity. The entire valley could have been planted with eucalyptus which would have only meant more erosion, more depletion of diversity – the diversity that has made the valley a bird sanctuary that is existing today. As everyone knows, all this is behind Krishnamurti's teachings. Eventually I had the privilege of sending my son to this school.

Diversity has been the measure of rejuvenating soil and water. But it has also other benefits. If you walk out of the school and find out how do the villagers survive, you will find that something like 99 percent of their livelihood is connected to biodiversity, directly as agriculture; they are pastoralists and their sheep and cattle need fodder; if they are craftsmen they need reeds and bamboo. A very simple calculation has shown that, looking at the crafts, medicine or agriculture, two-thirds of the poorer part of India need biodiversity as their capital because they have no access to money or banks. This only capital is natural capital. And the way they get interest from that capital is through biodiversity which lends itself to all kinds of uses. What we now have is the clash between two views of this richness which the earth has given us. One is the view that sees biodiversity as an extended family of species, interconnected, mutually dependent and therefore equally responsible for each other's existence. The other is the mining paradigm. We first mined for coal and by burning it polluted the atmosphere with CO_2 to an extent that we cannot control its evil effects like the hurricanes and climatic changes. That mining paradigm is being extended to the living world.

We are actually seeing the emergence in front of our eyes another view - the view of living resources as a genetic mine and nothing but a genetic mine, that they have no role in providing life-support within their own biological kingdom and in providing livelihoods to the poor. So the only thing left for us is to go and hunt for that valuable gene, whether it is in the human being or in any other living form that will serve our purpose. We have the Human Genome Diversity Project which enables

those engaged in it to collect blood samples, put a stamp and say this is my property, my invention and patent it. They go round scouting the earth for soil microbes. No microbe is useless, all of them produce interesting biochemicals, and then patent the antibiotic they produce. They go round for the neem and the pongamia and the bel in their search for products to patent and make profit.

There is a beautiful teacher teaching the values of medicine and medicinal plants. He asked his students to go round and have a look at the plants in the vicinity. And when the students came back and said no plant was useless, the teacher said: "Now you are ready to practise medicine." Literally we have the entire living world around us which is a genetic mine. The people who know most about the richness of this genetic mine's resources are the tribals, the villagers, the illiterates, the forest dwellers. But they get marginalised, even though they know the intrinsic value of each and every species of plant around them. It is a part of their culture. But people exploit and devalue not only their knowledge but also diversity itself by exploiting it. We are literally at the threshold of a cross – cultural respect that for the first time we have an occasion to undo the Macaulayan world of what education is, what knowledge is. As that threshold gets linked with biological diversity we learn to respect cultural diversity – those millions of traditions that can teach each other and coexist with each other. At that point, those marginalised cultures, that are pointing to the future are being denied the use of that knowledge which can ensure rejuvenation on an ecological basis. This knowledge is being exploited for commercial gain on a large scale. This precisely is the term bioprospecting is about. It came out of mining first. You prospect for minerals. Bioprospecting is prospecting for genes. The arrangement is like this. The prospector who has the capital and the commercial strength basically tells us, "You tell me what you use your plants for. I will give you a little bit of compensation, but from then onwards the monopoly right to use it, and market it will be mine." That is what patent regime is all about.

Patent regime is a system that wipes out the economy of two thirds of the world. It is also a system that will wipe out 99 percent of the ecological function of this living diversity. The point at which this wiping out of this ecological function is most dramatic is, when the idea is brought in that, once you have mined the valuable genes, you can manipulate them to put them into any organism that you find useful, put them into any

environment, and do not worry about what it is going to do to the rest of the species. That is really the debate that is taking place right now in India around the trial of genetically engineered crops, by a particular company called Monsanto, which is collaborating with Mahyco. This debate is taking place all over the world. It is taking place because people have a gut sense that this large scale of agricultural and food production, crossing species barriers, is going to have health and ecological consequences on scales we cannot imagine. But it is also based on existing scientific knowledge that tells us that as we cross the species barrier, more frequently we are going to create more movement of genes across species in ways that are not designed or planned. For example, herbicide resistant genes which are put into the plants are moving out and starting to turn other species into weeds that cannot be controlled any more. So we need more toxic sprays and chemicals to control them. In the case of the particular species that has been planted, the Bollgard Cotton, with the wonderful advertising and PR techniques they have, the companies tell us that these plants have pest-resistant properties. They never tell you that what they have done is taking a bacterium called *Bacillus thuringiensis* and putting it into the plant. This plant starts making a toxin all the time which is different from what the bacteria has made. The bacteria make it in crystalline form. But the plant makes it in a soluble form good at controlling the bollworm. We now have a toxin producing plant aimed at controlling the bollworm. This in fact applies pressure and the bollworm becomes a superbollworm, a super pest and other beneficial species are starting to die. The birds are going to accumulate this toxin in their system. The soil micro-organisms are affected by the leaf fall. Bee population within the Bollgard Cotton growing areas, I am told, have come down by a third in two years of planting, because they absorb the toxin carrying pollen. It is because this interconnected web of ecological links are forgotten and irresponsible production systems are introduced.

I think, when General Motors put out the slogan,"What is good for GM is good for the United States" and now the world, they actually created buyers of their cars and thus they created a societal commitment to General Motors. But at this point, what is happening is, instead of two thirds of society deriving the benefit of biodiversity, by the end of 1999 we are literally going to have five Corporations controlling the biological world through patents and genetic engineering in health and agriculture. Monsanto controls about 70% of the entire seed supply of the world

through ownership patenting, seed companies and through terminator technologies which deliberately create sterile seeds, seeds that will not germinate. That is what the present situation is reducing itself to, a two-thirds economy versus a five-Corporation economy with the latter ignoring life-support systems, survival and sustenance of other species. It is a recognition of other species for their intrinsic worth versus a plot with instrumental value with respect to biodiversity as well as society. Society too is merely an instrument. It has people who have a basic right to live and keep their livelihood intact. And this instrumentality is reaching its limit with the introduction of new property rights around biodiversity.

The Convention on Biological Diversity obliged to make countries respect and conserve biodiversity and utilise sustainably this natural wealth they have. Though I am not in the habit of congratulating the ministers, I must congratulate Suresh Prabhuji because he did a dedicated work by taking on the challenge. He got the Biodiversity Laws drafted in the full spirit of the Convention and the draft text has taken shape now. It is something that would actually help communities and societies. It would help educational institutions because there would be a whole new commitment to what is really our civilization – commitment to develop respect for all species. This law would also be a strong countervailing force to the other idea that life is an invention, that properties of plants are not gifts of those plants and that any one who has taken the knowledge from someone else without economic power can call it his invention and claim a monopoly over it. Very often people confuse between discovery and invention. I think there is a clear distinction between invention and piracy. What is happening is, knowledge is being pirated from ordinary people in their every day life, forest-dwellers, farmers etc. and taking away as invention by Corporations who have the money to manufacture drought-resistant, salt-resistant seeds and sell them all through the world. The Basmati from Dehardun is treated as an invention by an US Company in Texas. The US had oil but never had rice, certainly not Basmati. It now has the dream that it will have control over the entire trade in Basmati. They tried to set up a 100% owned subsidy in India to back up the patent with control over the trade system.

That is why NAVDANYA has prepared posters to convey that there will be no patenting on life. I do not believe that an earth ethic will permit patenting of life. First, it violates the intrinsic worth of species that is necessary for an earth ethic. If every species has an intrinsic value there

is no way it can be reduced to a spot in the market place. I don't believe that life can be invented. The aroma of Basmati and the properties of neem are not inventions but gifts of nature, gifts of the earth. And the way we humans have to relate to these gifts, is with humility within limits, and with gratitude and responsibility conserve the very basis on which these gifts are given to us.

There is another very basic gut reason why I feel patenting on life is all wrong. If we are really an earth family, just as I cannot say my son is my property, I think it is wrong to say that seeds are the property of a particular company. Once we take the relationship of kinship with all other species, we sever the ecological links that bind us together. To treat other species as our property is wrong in a fundamental way of an earth – centred thinking and an earth-centred philosophy. That is why, I have been delighted that in the last ten years and more, Rishi Valley has in fact through practice, brought into realization a genuine earth-philosophy, from which children here have learnt what the country as a whole will benefit from such learning. This has been achieved without the sense that unless we get huge grants you cannot start work on conserving biodiversity. These excuses must go. Within the structures that are in our society, within the resources that are available in our community and in our institutions it is possible to create schools as centres of biodiversity renewal from which the rest of the degraded environment could be recharged and find its buffer. I look forward to the next two days very much to see how we can in a very, very practical way fit biodiversity issues into the curriculum, into geography lessons, into economics lessons, into biology lessons.

I do not think there is a single subject being taught in schools and colleges which cannot be addressed from the biodiversity point of view. If you want to be a lawyer, the whole law on intellectual property is there. If you want to be Commerce graduate, it is just worth estimating what it entails in terms of cost, the work of the healers in our villages, providing 70% of the health care in India. I think 90% of the veterinary care is based on medicinal plants that people find in their neighbourhood. I think what India is facing right now is the crisis of forgetting. It is precisely to overcome this crisis of forgetting that initiatives like herb gardens, the setting up of seed banks across the country etc. prove valuable. It is for this exact purpose that NAVDANYA is collaborating with Rishi Valley for holding this workshop on biodiversity conservation.

It is tremendous excitement because such experiments in regeneration instantly make us remember our mothers. My aunt in the village still has that feel. That is how seed banks started to grow, through distribution and exchange. The economic calculations we have done in the last few years, linked with conservation has proved that conservation is something more than what the word suggests. It is a basic need. You need to conserve the drought-resistant varieties of the Deccan, the sorghum and the ragi and the tur dhal. If we don't have such varieties of quality seeds we will have the situation that farmers of Warangal faced recently. Last year only one variety of cotton was planted – RTH.I. Because of climatic changes leading to unseasonal rainfall, the population of bollworm increased too much. Besides the normal spray, the farmers had to spray about nine times more and got buried under a load of debt leading to many suicides. This tragic happening is the direct result of monocultures and destruction of diversity. Diversity is a buffer. No matter, how much rain falls, if the farms are diverse, something will grow. If you have ten varieties of a crop, when the drought comes you will not be faced with complete failure. That is why NAVDANYA always recommends planting of nine varieties of seeds together.

The soyabean industry has declared that India does not need the oil it uses. Soya oil can replace it. They say having a variety of dhals like the tur, the urd, the moong etc. is too much of a luxury. Grow soya, put it through industrial factories and manufacture what the soya advocates call the analog dhal. Analog dhals would be extruded into the size and colour of the dhals we are familiar with. I am sure none of you will relish it if your dishes like sambar and dosa are all made of these artificial extrusions – analog dhals.

We are living through exciting moments. Even though there is a hierarchy of professions, the biggest changes we need to bring about is by working with the future generations. No profession lends itself to this task better than the teaching profession. I look forward to this workshop on biodiversity conservation to discuss all the related issues thoroughly and objectively and chalk out the paths leading to the goal of biodiversity conservation at the local, regional, national and international levels.

Thank you.

Keynote address

Shri Suresh P. Prabhu
Minister for Environment and Forests
Government of India

Dr. Radhika, Dr. Shirali, Dr. Vandana Shiva and Friends

I congratulate Rishi Valley School and the NAVDANYA Foundation of Dr. Vandana Shiva for organising this very interesting programme of Workshop on Biodiversity Conservation which is going to start now and will go on for the next two days. It is very interesting because very rarely you find schools taking the lead in highlighting a subject which I think is more important than the usual subjects taught in class rooms. The objective of education is to train students in such a manner that when they leave the school they are able to shoulder responsibilities of society in the manner they have acquired during their schooling. But very rarely is this objective realised. In my view, biodiversity conservation is one area in which they will all be concerned, now as well as later, and this workshop I am sure will provide the right occasion for discussing the methods for studying this subject. I therefore congratulate the organisers of this programme.

This theme of biodiversity conservation is very topical because tomorrow (29 Dec '98) we are going to celebrate the WORLD BIODIVERSITY DAY and this workshop is being organised on the eve of a celebration on a global scale. Hence this workshop gains added significance. What is done on the eve of any particular event is more important than the event itself like the Christmas Eve or the New Year Eve. So is the eve of the World Biodiversity Day. Hence the dates for holding this workshop seem to have been thoughtfully chosen. It is also important because next year, India will be passing a legislation on biodiversity. India will be one of the first few countries to pass a legislation which is going to be on a subject as new as protection of the biodiversity of the world. Biodiversity as such is not new. We cannot even imagine its origins, when it was created and how it evolved. Perhaps it is as old as the universe. The starting point of the universe must also have

been the starting point of biodiversity. But nobody thought till recently that legislation is necessary for a subject like this. In the past, nobody could imagine that human beings could be so thoughtless as to destroy in so short a span of time so much of biodiversity that has been created. And the need arose for serious thinking on this subject at national and international levels. This culminated in an International Convention on biodiversity protection. It has now been realised that legislation is required in each and every country. We would be taking the lead because India is among one of the twelve mega-biodiversity countries in the world. We have most certainly realised our responsibility to preserve and conserve this richness for the future generations of our country as well as the world. We would have introduced legislation in the recent session of Parliament, but there were many preoccupations. Therefore we will be introducing the bill on biodiversity protection as one of the top priority subjects the government is engaged on. Hopefully, this would be the gift of the present government to the society in the form of a bill, as my friend Dr. Vandana Shiva said, drafted in close coordination with environmental activists, scientists and all those who believe in the imperative and immediate need for biodiversity protection. All our thinking on this subject has been brought into this legislation, which I think is going to help in preserving and conserving biodiversity and prevent its exploitation as is happening at present.

But a legislation is only a vehicle. It is only a solution to the present problem; but it has its limitations which can be overcome only by education. So what is really needed is for legislation to serve as a platform from where we can launch a programme for change which education alone can bring about. Therefore, the second step of the government, which has also been my preoccupation for a long time, is to introduce the kind of education necessary to bring about a change in the mind-set.

We have come to realise that biodiversity protection is so critical, so vital and so important to the very existence and survival of mankind. How did it happen that we have reached a stage when we are destroying it so much? Why did we keep on destroying it even when we realised that this path of destruction will lead to our own destruction? Probably the human race as such will not be around when the next century will usher in, a hundred years from now, if we continue to do what we have been doing in the last two hundred years, after the advent of the industrial revolution. We thought that knowledge has been given to us to exploit

something. But knowledge and enlightenment are two different things. We forgot this distinction. As a result, our knowledge about the use of certain things led to a point when they can stop regenerating because of over-exploitation. What is really necessary is not knowledge of what a particular natural resource can be put to but the enlightenment to make us realise that unless we preserve and conserve the natural resources – whatever they may be – it will lead to our own destruction. This enlightenment can be brought about only by the right kind of education. There are few institutions in India and the world like the Rishi Valley institution which has realised this distinction between knowledge and enlightenment. It is therefore appropriate that this workshop is being organised by the Rishi Valley establishment which has actually put into action this distinction by its sustained efforts to preserve and protect biodiversity and also promote enlightenment in this regard.

Legislation is a forum for initiating the required change. The other initiative viz., using education as the instrument of change, has already been decided upon by the government. So, from the next academic year, schools and colleges will be required to introduce environmental education as a compulsory subject. It should include all facets like biodiversity, ecology and conservation, necessary for bringing about a change in the mind-set, so very necessary to realise the value of biodiversity and the need for conserving it and preserving it and also using it in such a manner that it doesn't destroy itself and has the potential of regeneration. This initiative has now been endorsed by the education ministers of all the states in the country in a conference held for the purpose of introducing environmental education as a compulsory subject from the next academic year. I am glad to say that Maharashtra is the first state which is actually going to start this from June 1999. I hope all other states will make similar initiative. Then we will be able to support by legislation which will serve as a platform for implementing this new development. This will help us understand the necessity for keeping biodiversity intact.

We knew that the type of destruction that is taking place in the name of development is destroying what is provided by nature. Destroying forests, constructing roads by getting rid of trees and building dams – that is what development means now. We pursued this in that fashion and what we see around us today is a development, in inverted commas; but in reality it is destruction that is staring at our face in a clear way. We

really knew what is meant but we lost sight of that. Now, if you go to a village, the demand is for a road in preference to a farm, in preference to the tree cover that is around us, for a dam in preference to a forest. What is necessary is a change in the mind-set which makes people think that development must be had destroying our biodiversity. So a change in the pattern of education alone can bring about the change of mind-set. That is why I am happy that this is going to take place through the medium of schools.

It is one thing to say, environmental education should be used in the curriculum of all schools. But it is another thing to find out how this is to form part of all subjects being taught in schools. Take history, law, economics, sociology, etc. How to introduce biodiversity in all these subjects is very critical and important. In fact, it is more important to introduce this in economic decision-making. Unless this is brought about, all our talk of bringing about a change in the mind-set are going to fail. It is so because, when we decide to construct huge power plants which are required for increasing needs of the community for power, when we want huge linkage of roads to link the distant parts of the country from east to west and from north to south, all these are going to involve destruction of natural resources. When we make economic decisions regarding construction of dams and power generation and roads, how to enshrine environmental protection in the economic decision-making processes is going to be a big challenge for society. Therefore, in the next few months we will be organising programmes to discuss as to how economic decision-makers, the Chief Ministers, ministers of industries and industrialists are going to enshrine environmental concerns in our development plans. This seminar will be presided by the Prime Minister and attended by other ministers to discuss this important theme. The children in schools today are going to be the enlightened citizens of the future. And all that they learn about the environment in schools will be unproductive unless economic decision-making also goes hand in hand with the change in the mind-set we are trying to bring about.

There is another important aspect which is very relevant in the context of this workshop. This is a school that was founded by that great philosopher, J. Krishnamurti. I used to attend his talks and hear him when I was a young student. I used to wonder and say how sometimes one man can change the thinking of the world. Then I realised that it had happened with a few others also like Mao-tse-Tung, Karl Marx and there

was of course Mahatma Gandhi who had done likewise. Later I realised that the essence of change lies not outside us but within us. Krishnamurti talked about religion no doubt. But all religions talk of environmental concerns, how to live in harmony with nature, how to worship nature and diverse forms of creation. So we also decided that in April 1999 on the Earth Day we will be celebrating, we will get the heads of all religious groups in the country together to explain what is already stated in their particular religions so that each one of us can learn how to bring about that change within ourselves and promote and take part in biodiversity protection. Just imagine, if a student is given a sapling when he goes to a temple or a gurudwara or a mosque, along with the prasad that is given, will he take care of it or throw it away? I am sure he will definitely like to treat it as a gift of God, plant it and protect it. Sometimes I talk about the kind of education like what you have been practising in Rishi Valley. You take students out in the field to show them the herb garden or plant saplings in the campus. If a student is given a sapling and marks are given for the way he cares for it, not only he but even his whole family will get involved in the growth of that tree. Not only will that tree grow but alongside, the culture of growing trees will also find its due importance. Eventually, it will be the tree that will be the harbinger of bringing about a change in the way of thinking of the student as well as his whole family. That is why we propose to make use of religion for bringing about this change.

So I look forward to this workshop, which is the first of its kind in a school. I hope it will not end with conclusions but will mark the beginning of how biodiversity protection is taken cognizance of by each and every school and each and every family. I am sure this will pave the way for students to consider environmental studies as one of the important subjects to be studied by each and every student and his family. Though not applicable to Rishi Valley, that approach should be something applicable to the education system in the whole country. Normally a student is told that if he concentrates on this or that subject and gets more marks, it will help him to get admission into a professional institution for furtherance in his career. If it is realised that survival of mankind is of utmost importance, then environmental studies and biodiversity protection will become important subjects. In fact, at the present juncture environmental studies have gained recognition as critical to the survival of all forms of life including human survival. I

congratulate Rishi Valley School for taking this initiative which the Government of India will very strongly support. In fact, my presence here to associate myself with this seminar is an indication and a demonstration that all of us really believe strongly on such a vital issue. To me, it is a great opportunity to be in the midst of so many young children here.

As I said in the beginning, if I were given the choice, I would also like to be a student of this J. Krishnamurti School so that I could also sing such beautiful songs that some of you sang at the beginning of this programme. Though I could not sing these songs I had the opportunity of listening to these songs. I was impressed by the way this programme began by appealing to the Almighty that let there be SHANTI all over. But can there be Shanti when we are ourselves creating so much violence around us. I am not talking about the other kinds of violence. We are violent by uprooting what has been given to us by nature, destroying the biodiversity around us. Can there be real Shanti when we do such things? This biodiversity has not been created by us. We did not ask for it. We are, in fact, a part of it. It is the creation of nature and Shanti cannot be had when we are destroying it. Think of what we do during festivals like Diwali. We decorate our houses with small electric bulbs for illuminating them. If one of these bulbs does not function, the whole chain of bulbs will not burn and illuminate. This is because each bulb is part of a chain of bulbs which maintains continuity of the flow of electric current. In a similar way, by uprooting any link in the biodiversity chain, we will never know what adverse effects it will have on the survival of human beings themselves. So I think your prayer songs for having peace around us is the right prayer. But unless we follow it up by protecting and preserving the biodiversity around us we may not be able to succeed in maintaining peace and harmony in society.

Lastly, biodiversity, as I mentioned earlier, also includes human beings. We cannot have biodiversity without humans. We are creations of the same nature. But we began to think that it is the prerogative of human beings to determine what should survive and what should not, on earth. As a result, we have, particularly in India, a real diversity of human beings. Really speaking, there is unity behind this diversity and we are unanimously agreed on this fact of unity in order to keep harmony around us. This unity of thought should help us realise how this biodiversity can be preserved. We also should give serious thought to one

issue viz. if we keep on multiplying the way it is happening, can the whole world afford to have so much population and be part of nature without upsetting the balance of nature and keep biodiversity intact? One of the greatest threats comes from a huge population. Every villager who knows about the value of biodiversity is not able to maintain it because he needs a field for agriculture, a house for his family and a water source to meet his daily necessities. Unless we give serious thought for keeping a low level of population, whatever efforts we may put in, biodiversity will be under constant threat. So all of us must address this issue and proceed in the manner in which you began with an invocation to God to give us the strength to resolve the complex issues that are confronting all of us. I think that the end of this year (1998) and at the beginning of the New Year, which is also taking us close to the threshold of a new millenium, all of us should learn the right lessons from our past experience and be ready to face the challenges ahead of us.

I wish the Rishi Valley establishment all the best in its endeavours. This is the first school to provide the impetus to the study of this vital issue - protection of biodiversity - confronting the World Community.

Thank you very much for giving me this opportunity.

Environmental Awareness in Schools*

B. Vijayaraghavan, I.A.S., (Retd.)

'Colette, the celebrated French author, whose works dwelt on the joys and sorrows of love, once told a young writer: "Look for a long time at what pleases you and longer still at what pains you". Though Colette said that in a different context altogether, to me it appears that this simple quote encapsulates what environmental awareness is all about. Teach the child to look for a long time at what pleases him in Nature. The awareness of the environment requires first and foremost the ability to wonder at the beauty and the mystery in all the things in nature. The child is born with this faculty and we have to further develop it in him.

This sense of wonder is something that is exceptional to human beings. No other animal on earth has this. Other animals may have curiosity as in a cat playing with a ball of string or a dog teasing a pair of chappals or a chimpanzee manipulating various objects. This is curiosity, not wonder. It is only human beings who are blessed with this sense of wonder. And this feeling of wonder is found in its most innocent and most profound form in the child. As he grows older and becomes more accustomed to the sights and sounds around him, and "the shades of the prison-house close upon him" as Wordsworth put it, this sense becomes stale. It should be the endeavour of any environmental education programme to see that this sense is kept alive in the child and made to grow because to wonder is to begin to understand. In course of time, this feeling of wonder can even grow into dimensions beyond environmental awareness. It can transform itself into aesthetic, intellectual, religious, spiritual or metaphysical experiences. Arthur Koestler referred to "the oceanic feeling of wonder", as he called it, as "a common denominator among religious mysticism, pure science and art – for – art's sake". When the child looks upon the environment with this sense of wonder, he is able to realise many truths. Rachel Carson, who wrote *Silent Spring*, among many other books, and initiated the whole debate on the environmental dangers in the use of certain types of pesticides which paved the way even for legislation in the USA against the use of broad — spectrum pesticides, wrote of "the symbolic as well as

* Address delivered at the Workshop on Biodiversity Conservation for Schools at Rishi Valley on 29th Dec. 1998.

the actual beauty in the migration of birds, in the ebb and flow of the tides, in the folded bud ready for the spring,... how in these repeated refrains of nature, there is something infinitely healing, the assurance that dawn comes after night, and spring after winter". In a similar symbolic manner we can see the significance of how the caterpillar metamorphoses into the butterfly. The ugly little worm, after a gluttonous youth spent only in gorging itself, wraps itself up in meditation within the chrysalis and, after a while, emerges as a beautiful butterfly. There could be no better observance of the injunction that *to find one's self one must lose oneself.* For the caterpillar, it is the end of the world, but it is, in fact, getting transformed into a higher form of life. This is the kind of awareness in all its fullness that a teacher with sensitivity and imagination can instil into the child by pointing out simple phenomena in nature.

It is important that we make the child thoroughly enjoy this beauty and this mystery of nature, all these deep significances, before we lead him on to the next stage of becoming aware of all the wrong things that are also happening around him; how man, by his greed, his thoughtlessness and his shortsightedness, has been relentlessly despoiling nature. To paraphrase Colette: make the child look longer still at what pains him, at all those things that should pain him. Because, from such pain should come concern, an urge to protect, preserve and cherish.

Now, why is it that this progrmme for environmental education is becoming increasingly relevant and increasingly necessary? Because, today we are on the brink of disaster — Disaster, with a capital 'D'. The destruction of the environment has been going on for years at such a galloping pace that it needs the concerted and devoted action of every single individual, man and woman, adult and child, to save the environment.

We are now in the midst of what is sometimes referred to as "the third revolution". After being hunter — gatherers for long, humans discovered agriculture : how they could tame the wild breeds of plants sparsely distributed in nature and adapt them for large-scale cultivation yielding plentiful quantities. The agricultural revolution began perhaps some ten thousand years ago and it is still going on, with the recent developments and on-going research in fields such as genetic engineering. Then we had

the industrial revolution which started some 200 years ago, and gave us a wide variety of goods and services by utilising natural resources. And today we are in the midst of the environmental revolution which has become necessary to set right the excesses of the first two revolutions. Though the agricultural revolution enabled mankind to sustain itself, it also resulted in an explosive growth in population. It also led to uncontrolled devastation of nature – destruction of forests for conversion as agricultural land, destruction of the environment by the reckless use of chemical fertilisers and pesticides and so on. The industrial revolution led to excessive exploitation of natural resources, a good part of it being non-renewable like metals and minerals and, especially, fossil fuels. It also threw up waste on an unimaginable scale, some of it non-biodegradable or otherwise hazardous which polluted the earth, the air and the waters. Thus, today, we are confronted with the task of setting right the excesses of the first two revolutions and restoring some balance in our eco-system.

This is the third revolution and it is much more difficult for it to succeed than the earlier two for various reasons. Firstly, because we do not have much time to achieve results. We are in dire danger and if the environmental revolution should serve a purpose it has to be compressed into a few decades. If we don't do it, everything is lost. It cannot be spread out over a few thousands of years as the agricultural revolution or a few hundreds of years as the industrial revolution. Secondly, the first two revolutions were able to succeed in a dramatic way because they appealed to the individual's selfish interests. But the third revolution is of exactly the opposite kind. The individual is now called upon to sacrifice his self-interest in the larger interests of the community and the future generations. That finds few takers. Thirdly, the first two revolutions needed action at the individual level only. But the third revolution is an entirely different proposition. Here, individual effort is not sufficient, what is more required is action at the community, state and national levels and even on global dimensions. Fourthly, unlike in the case of the first two revolutions which were able to bring about the desired transformations in a smooth manner, in the case of the third revolution, those who are spearheading this movement have to fight against entrenched vested interests. There are powerful lobbies with money power and muscle power and political support who are working against this revolution succeeding because it will otherwise be commercially

unattractive for them. Even governments unwittingly work against this revolution for various reasons. This opposition makes the task of the people involved in this revolution very arduous. Fifthly, and most importantly, the environmental revolution calls for certain fundamental changes in our value systems, in our attitude towards exploitation of nature for our immediate and short-term benefits, in our consumption habits, in our outlook on life itself. It demands the demolition of many of our existing sets of values and the acceptance of new sets of values. This will not be a popular call but the response to it will decide the success or failure of the environmental revolution.

For this revolution to succeed, we have to mobilize the active cooperation not of government agencies alone because they may sometimes be well – informed and do the right things, but, sometimes, may also do the wrong things because of populist reasons or political pressure; we have to mobilise the active cooperation not of non-governmental agencies alone because, for the most part, they are ineffective or disorganised or feeble — we have to mobilise the active support of every section of society, of every individual. That is why the schools should provide and prove a good starting point.

Then again, if we make the child environmentally aware and concerned and responsible, we are indirectly educating the parents and the community also in these matters.

Environmental education is specially relevant in schools and colleges also because it is the generation that is in schools and colleges today and in the immediate future that will have to suffer the major consequences of the damage to the environment. Those of us belonging to the older generation may still be able to live our allotted span without any serious discomfort or danger. But one shudders to think of what will happen to the future generations, a fifty or hundréd or two hundred years from now, who will have to suffer all the known and as-yet unknown consequences if devastation of the environment continues at its present pace.

Environmental education in schools has to be at many levels and in many forms. In the first stage, the student has to be made aware of the beauties of nature, he has to be allowed to enjoy nature and to partake of the pleasures of watching life in all its myriad forms around him – plants, insects, reptiles, birds and all other forms of life small and big. These are

sources of interest even to the smallest of children. It is for the teacher to see that this interest is nurtured and developed through various activities – bird watching, observing reptiles, study of insects and plants etc. In a place like Rishi Valley, you are blessed a hundred times – all you need is to just step outside your houses or hostels to observe the miracles of nature in their many forms. This kind of a rich environment is denied to others, mostly those in urban areas. But all is not lost. Even in those apparently uninspiring surroundings, there are abundant opportunities for watching nature. Right in the middle of a city you can observe nature if you have the eyes and the ears and the sensitivity to do so. Recently, I was reading somewhere how by building a terrarium for spiders on the verandah of your house, you can acquire a sound education on the eco-system, watching the spiders build the many types of webs, how they catch their prey, the many other aspects of spider behavior some of which are not even well-known. This is an example of how the child can be motivated to observe nature in his own dwelling or its immediate surroundings even in an urban location. Moreover, even in cities and towns there are gardens and parks and open spaces with trees and other vegetation where children can watch nature. It is not always necessary to go into a forest to study nature. As a matter of fact, quite a lot of research in wildlife biology has been done by scientists with very limited facilities. To give an example, take the case of Jean Henri Fabre who not only made a comprehensive study of insect life but also wrote evocative literature based on his observations, literature of such beauty that Victor Hugo called him "Insects' Homer". He made all his observations on a barren patch of land near his house. Based on this, he wrote ten volumes of his *Souvenirs Entomologiques*. That is the kind of study a committed lover of nature can make even in what may be considered uninspiring surroundings. Therefore, enthuse and motivate the children to observe and study and enjoy nature whatever may be the surroundings in which they live.

Next, I would like to stress the fact that a sound scheme of environmental education should have as its corner stone, value systems. You cannot have a meaningful environmental education programme without also inculcating in the child certain ennobling virtues. I would say that the three main planks of this value system are :

* firstly, compassion for living things,
* secondly, the virtues of simple living, and
* thirdly, the acceptance by the individual of responsibility for the health and welfare of the community.

First, as I mentioned, compassion for living things. Compassion is not the same as pity. Compassion implies that we have to accept that all other life - forms on earth have a right to exist as much as we have. The Earth is our common inheritance along with them. It is not even entirely right for us to regard the human species as superior life forms — we are superior to other life forms in certain respects; there are life forms which are superior to us in certain other respects. Any number of examples can be given to show that insects like the bee, snakes, birds, bats and animals like the dog, the dolphin and the elephant have auditory and visual faculties beyond the range of such faculties in man or, perhaps, even senses other than the five senses man is born with. Read about the research findings of Karl von Frisch on the 'dance language' of the honey bee. Or, about the work of Katy Payne in Africa on how elephants communicate with each other over distances of as much as four kilometers through infra-sonic sounds which cannot be heard by the human ear and which can be recorded only on sophisticated electronic gadgets. Or, read about how birds orient themselves during long – distance migration about which we do not know much even today. It is, therefore, wrong for us to presume that humans are superior in any absolute sense to other life – forms, be they minute or massive. Also, remember that some of these species have been on the earth for millions of years compared to which man is a recent interloper. The detested cockroach which we crush under our feet occupied this planet over 200 million years ago while the human species made its appearance just one million years ago. Moreover, even if, God forbid, the human species gets exterminated by a nuclear winter, the cockroach is still likely to persist. All these should make us feel truly humble and it is from this humility that compassion for our co-inhabitants on this earth should flow.

No doubt, as a species, we have a responsibility to ourselves to see that we survive and survive in some comfort. And, if the human species has to survive and live in some comfort, it will make it necessary to inflict some degree of violence on other life - forms. I am not dishonest enough to deny this. But, what we have to remember is that when we have to indulge in violence against other forms of life, it should be the minimum necessary. And, it should be with a due awareness that we are dealing with 'life' which is a phenomenon beyond our comprehension. What 'life' is we are unable to comprehend, let alone define in spite of all that our philosophers and scientists have said about it. What is life ? Is it a 'buzz

of bio-electricity' as somebody said? We frankly do not know. Albert Schweitzer, the famous doctor of Lambrene, coined a beautiful phrase, *reverence for life*. He taught us that we are not being truly civilised if we concern ourselves only with the relationship of man to man, what is important is the relationship of man to all life — "a relationship that is essentially one of reverence for all living things, plants, animals, wilderness, people, a relationship that leads to a life in harmony with nature". Schweitzer wrote: "Whenever I injure life of any sort, I must be quite clear whether it is necessary. Beyond the unavoidable, I must never go, not even with what seems insignificant. The farmer who has mown down a thousand flowers in his meadow as fodder for his cows, must be careful on his way home not to strike off in wanton pastime the head of a single flower by the roadside, for he thereby commits a wrong against life without being under the pressure of necessity". We must note that this attitude has a significance even beyond the realms of environmental conservation.

This compassion is needed today more than ever before, even for our own survival as human society. Unless we inculcate in the child this reverence for life, we will not be able to find in the adult compassion even towards human beings. I remember reading somewhere that there is a problem in developing in children an ethic that prohibits the dynamiting of fish when they are growing up in an environment that condones the use of dynamite on people. True, no doubt. But I consider that the converse is even more true. If we are able to inculcate in the child compassion towards all living creatures, it is bound to make him even as an adult revere human life.

The second virtue that has to be inculcated in the child as a foundation for a healthy outlook on the environment is the virtue of simple living. No amount of emphasis on this will be too much in today's context. The two greatest dangers, both inter-related, which are bringing about the cataclysmic deterioration of our environment are the explosive growth in population and excessive per capita consumption. The population of the earth has doubled to 5.5 billions during the last fifty years and it is estimated by demographers that, in another 50 years, it will double again. So we can well imagine what we are heading for, once the population density far exceeds the carrying capacity of the earth.

The evil effects of this are compounded by excessive consumption by certain sections of society. This unchecked consumerism is something artificially created by a few purely out of commercial greed. If you dispassionately look at all the various goods displayed in our markets or advertised day after day in the newspapers or on street hoardings or on the television, you will realise how little of it is really required for our genuine happiness. Most of it is superfluous, brought into existence merely to satisfy the greed of some manufacturer or trader. We are familiar with the old saying; "necessity is the mother of invention". Thorstein Weblen who coined the expression 'conspicuous consumption' put this saying on its head and said in mock-seriousness, "invention is the mother of necessity". Thanks to the advancements in science and technology, someone invents something or manufactures something which no one ever really needed in the first place. Having invented it or manufactured it, and to enable someone to make lots and lots of money out of it, a demand for it has to be artificially created through clever manipulation of the senses of a gullible public through advertisements. Right from the time we wake up in the morning till we go to sleep, it is a relentless assault on our senses through the newspapers, the television and all other imaginable means. Through such aggressive salesmanship, a wholly unnecessary demand is artificially created necessitating more and more production of these and similar goods. And so it goes on. It is 'growth for the sake of growth' and that is precisely the ideology of the cancer cell. This cancerous growth in consumption has to be curbed. On the one side it makes worse the already existing disparities in society making way for more and more discontent among large masses of the less affluent and poorer sections and this has explosive potential in sociological terms. It is a major reason even for the uncontrollable increase in crime. On the other side, this unchecked consumption eats up a major share of the earth's resources, much of it non-renewable, making precarious the life of future generations. The U.S., for instance, which accounts for about six percent of the world's population uses up as much as 40 percent of the earth's resources. The excessive use of natural resources also spews up huge masses of waste, a good part of which is non-biodegradable or even hazardous, polluting the soil, the waters and the air.

It is most unfortunate that this kind of rabid consumerism has, during the last few decades, become the hallmark of the Indian economy

as well. We have to have a very strong movement against this before it is too late. And this calls for stress being laid, in our educational institutions to begin with, on the virtues of simple living.

The third ethical aspect of environmental awareness that I want to emphasise is the acceptance of responsibility by the individual for the safety, welfare and happiness of the community. Most of us are very self-centered in our life styles to the extent of being indifferent to the rights and the needs of others. We are concerned only about our own comfort or of our immediate families. There is a view, as brought out by Gunar Myrdal in his *Asian Drama*, that this is more so in the countries of South and Southeast Asia which he calls the 'soft States'. It is a part of the national psyche of the 'soft State' that the people's loyalties are restricted primarily to their families; it extends very rarely to the communities they live in and it is only faintly manifested when it comes to higher levels of social structures like the State or the Country. And, therefore, when it comes to eco-system loyalty which is at the highest level, these people find it difficult even to comprehend it. This means that unless there is a conscious and determined attempt to make ourselves alive to our responsibilities, to begin with atleast, to the community in which we live, we can never hope to develop in ourselves loyalties to the eco-system. The way we dump our garbage on the streets, or the way we jump a queue, or the way we play loud music or the way we violate traffic rules to gain a few minutes of our time - these are all manifestations of our lack of concern for others. And so long as our children are not trained to show concern for others in everyone of their actions, big and small, so long as we do not make them accept responsibility for everyone of their actions, we cannot motivate them on their role in the protection of the environment.

I shall now briefly touch upon what I consider to be the appropriate methodologies in environmental education. In the earliest stages of school education, the lessons on environment and the underlying principles have to be conveyed to the child in easily assimilable and attractive forms like stories, songs, plays and games. It is wrong to introduce even at this stage abstract science or profound principles on conservation. In our culture, stories have always been used as a vehicle to hand down moral instructions. And environmental conservation should be part of this. It is not difficult to cull from our puranas, our ancient legends, our religious texts, lives of great men like St. Francis of

Assissi, Buddha, Mahaveera, Ashoka, Mahatma Gandhi etc., stories which have a moral on environmental care. I would urge institutions like the Rishi Valley School to take the lead in bringing out such material. Also, today there are many publishing houses in our own country which are increasingly taking an interest in children's literature. They should be motivated to bring out material of this kind.

Then, if you take poems and songs from the literature of the world, you will find a lot of material that explicity or implicitly speak out for the cause of the environment. Take, for instance, these lines :

William Blake :
A robin redbreast in a cage
Puts all Heaven in a rage
or
A skylark wounded on the wing
A cherubim does cease to sing

or, Elizabeth Browning :
And, truly, I reiterate, nothing's small !
No lily - muffled hum of a summer bee
But finds some coupling with the spinning stars,
No pebble at your feet, but proves a sphere
No chaffinch, but implies the cherubim

or, Francis Thompson :
Thou canst not stir a flower
Without troubling of a star

or, Gordon Bottomley:
When you destroy a blade of grass
You poison England at her roots.

(You are welcome to adapt it as "when you destroy a blade of grass, you poison India at her roots.")

These are just a few beautiful samples of poetry around which a teacher can build whole lessons on environmental concerns. What is the thought that runs through these lines I just quoted ? It is that the environment is one and indivisible. You cannot destroy any part of it without leaving a mark of your withering touch on other parts of it. Cut down the trees, and the life-sustaining top-soil is irretrievably lost, increased run-off prevents percolation of water into the earth. Kill birds and snakes, and the noxious insects and rodents will conquer the earth. Spray the crops with broad - spectrum pesticides and along with the

target organisms are destroyed insects beneficial to man. The simple words of the English poets I have quoted convey all these and more.

It is not in English literature alone but also in our own literature in our many languages that we come across similar examples. In the Atharva Veda, for instance, there is the hymn to Mother Earth which says:

"O Earth! what of thee I dig out
Let that quickly grow over !
Let me not hit thy vitals or thy heart."

This verse, written 4000 years ago, explains what we today call "sustainable use of natural resources". The sages of the Atharva Veda accepted that man has no choice but to utilise the resources of nature. But they cautioned that what is taken out of the Earth should, as far as possible, be capable of being replenished and should be taken out without damage to the core. In the hands of a competent teacher on environment, lines like these give so much scope for interpretation and comment .

Then again, in our folklore too, there is so much material that a teacher can draw upon to explain environmental themes. I come from Kerala. There was a time, not in the distant past, when we had large homesteads with huge ancient trees all over. There were what are now called 'sacred groves' in and around the homesteads. Our family deities and serpent gods were supposed to reside in these groves. For this reason the groves were preserved intact. We had also large tanks with clean water in our homesteads and outside. These groves had a role in the regulation of the micro-climate and in the replenishment of the ground water. Our grandmothers were ignorant of the environmental principles underlying this relationship. But, they used to warn us of the dire consequences that would follow if the sacred groves were interfered with. On the surface, the warning was "if you destroy the sacred grove, the wrath of the gods will dry up the tanks". But the exact implication was something scientific which you and I know today. This is the kind of nuggets of folk wisdom we should locate and weave into our lessons for the child.

The teacher of environment should also make use of real life stories available all around us throughout the length and breadth of our country,

Take, for instance, Chipko aandolan, the work of Sunderlal Bahuguna and of Chandi Prasad Bhat in the foothills of the Himalayas, and of Anna Hazare in Raalgaon Sidhi in Maharashtra. These are well-known examples. There are also little-known examples such as the account of one Rajinder Singh which appeared in a recent issue of *The Week*. This tells us how by the simple process of building check-dams and by digging percolation tanks, one man was responsible for initiating an agricultural revolution in some 650 villages in Rajasthan. Then, we have the story of the Bishnoi community in Rajasthan who have protected their blackbuck, the chinkara and other wildlife and the trees around with a religious fervour unequalled anywhere. Or, take the Rishi Valley experience, how the dedicated work of the staff and the students has converted a huge tract of barren land into a man - made forest. Not many people in the rest of India know about the miracle you have performed here, and they ought to know. Therefore, real-life stories like these from all parts of India should be collected and explained to the students to make them understand not only what ought to be done for the conservation of the environment but what has, in fact, been done by others and what they too can really do.

That brings me to a most important aspect of environmental education. It is this : we should teach the children that conservation of the environment does not mean merely complaining about all the wrong things that are being done. We should teach the child to be creative and constructive, have a positive approach and develop a readiness for problem-solving. Such opportunities for problem-solving are available to the students in abundance wherever they are. They should be guided to get hands-on experience and make the maximum possible contribution to improve the local environment within their easy reach. This is what is conveyed by the well-known exhortation : *"Think globally, act locally"*. But, today, what is happening is we think globally, but we are not prepared to act locally because that is the more difficult thing to do.

Before I conclude, I wish to make a couple of points about the environmental syllabus in schools. I have no competence to go into the detailed structure of the syllabus but since I noted a few things during the discussions yesterday, I shall confine myself to a few general

observations. Environmental issues should not be restricted to higher levels of school education alone. It should start at the lowest level in schools in different forms in structured layers beginning with songs and poems, stories, folklore, real life experiments and so on. Gradually, the environmental content should be firmed up and built into all the various subjects that are taught. In the final stages in schools, environmental science should become a specific subject and cover comprehensively all the major issues. I find that, in your syllabus, i.e. in the ICSE syllabus, Environmental Science is a specific subject for standards IX and X. But, then, my grievance is that it is shown under the 'optional list'. The list of compulsory subjects covers English, languages, geography, history and civics. Environmental Science is not in this list. This is very wrong. The syllabus gives the aim of civics as a subject as follows: "To provide an understanding of the working of the Indian Government necessary for the students to grow into responsible, enlightened citizens in a secular democracy". This is all to the good. But, to me, it would appear that before the child is taught to grow into a responsible citizen of the body politic, he should be taught how to be a responsible and caring member of the earth community. So, while it is necessary that civics continues as a compulsory subject for standards IX and X, it is equally or even more important that environmental science is also made a compulsory subject at these levels. Having said this, I must add that environmental science should be freed from the rigours of the examination system. I say so because the examination system is the easiest way to kill enthusiasm for any subject. If, during my college days, I developed an aversion for English literature, it was because of Shakespeare and Milton. It was not the fault of Shakespeare or Milton; it was not even the fault of my English teachers; the fault was in the examination system which made it mandatory that we crammed and memorised with little understanding and less appreciation and regurgitated the material in the examination hall. It was only after I left college that I discovered the beauty and the riches of English literature and of Shakespeare and Milton in particular. So, let us free the study of environmental science from the rigours of examinations. I say this also because the purpose of teaching environmental science is not merely to improve knowledge levels as in the case of many other subjects but also to improve levels of consciousness

which no system of examinations can accomplish. A certain minimum number of hours of class work in environmental science should, however, be prescribed and, for the rest, the student should be left to himself and guided to forage on his own, acquiring not only knowledge but also hands-on experience and renewed perceptions and sensitivities.

As important as all that I have said is the need to have the right kind of teachers to teach environmental science. Environmental science calls for a new breed of teachers. I do not mean any disrespect to teachers in other subjects. A good teacher in other subjects should, of course, be knowledgeable about his subject. It.will be good if he also has a love for the subject. But a teacher in environmental science has to have these and something more. He should have a passion for the subject . Passion is more than love. This passion should permeate his every thought and action, every moment of his life, and then alone he will become a source of inspiration to his students. Equally important, he should demonstrate to his students by his own personal example all the values in life-style that constitute the foundation of environmental awareness and the accceptance of responsibility towards conservation of the environment.

Part II

Extracts

The "control of nature" is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man. The concepts and practices of applied entomology for the most part date from that Stone Age of science. It is our alarming misfortune that so primitive a science has armed itself with the most modern and terrible weapons, and that in turning them against the insects it has also turned them against the earth.

– Rachel Carson
in "Silent Spring"

Wildlife Conservation : Rishi Valley Experiment

S. Rangaswami

Hony. Chief Warden, Rishi Valley Bird Preserve.

"It is odd that we have so little relationship with nature, with insects and the leaping frog and the owl that hoots among the hills, calling to its mate. We never seem to have a feeling for all living things on earth."

– J. Krishnamurti

For decades, Rishi Valley Education Centre has undertaken conservation projects that are recognised as models of their kind, in which conservation joins hands with education to bring about environmental renewal. In a Key-Note Address at a recent Workshop on Environmental Education, Mr. B.Vijayaraghavan called this work 'a remarkable experiment' in blending theory with practice. In a survey of environmental and social problems throughout the world, Robert D. Kaplan called this work a 'human success story'. More recently, the Education Centre received the Indira Priyadarshini Vriksha Mitra Award for its conservation work.

In his address, Mr. Viiayaraghavan drew attention to the educational importance of practical experience in 'problem-solving and creativity', which, in his words, produced 'spectacular results'. In his recently published book, *The Ends of the Earth: A Journey at the Dawn of the 21st Century*, Robert Kaplan reported on the social costs of environmental degradation in many countries, and held up the Rishi Valley projects as a demonstration of how positive environmental results can be achieved with small-scale local efforts.

The experiment these authors refer to has been taking place in a remote corner of Andhra Pradesh, where a once-barren environment has been slowly regenerated. According to local lore, an abundant forest cover was lost when railroads lumbered through the region and numerous trees were felled to support their tracks and feed their steam engines. After many decades of overgrazing, along with the pressure of extensive groundnut farming, soil cover degraded and exposed underlying layers of granite throughout the valley and its surrounding hills. Now bare rock

formations, sculpted by wind and rain, are landmarks that give the landscape a rugged beauty while standing as reminders of an overburdened ecology.

Generations of local residents, students and teachers have worked together to plant many lakhs of trees. They learned to build small check-dams and earthen bunds to conserve water, a very precious commodity in Rayalseema. The check-dams and bunds prevent water from running off the land, allowing it to percolate into the earth, flowing through underground crevices, feeding trees and replenishing ground water. The result is that a one-hundred-and-fifty- acre hillside, which only a few years ago was bald, parched and degraded, is now covered with scrubland forest. A recently constructed percolation tank in a central catchment area has recharged wells for three miles downstream. All these measures have benefited local farmers, who with abundant water in their wells now grow paddy and tomatoes in the summer and border their farms with Jamun and Tamarind trees, grown from saplings donated by the school nursery. The campus now holds out an invitation to all forms of life. Indigenous varieties of plants, insects and birds have returned to their native habitat; migrants have arrived to find shelter and food in abundance; and alien forms have begun to colonise the newly established wetland areas.

Life creates the conditions for its own regeneration. As soil and water combine, flowering grasses arrive, enticing a variety of bees, wasps and butterflies. These in turn attract rodents and snakes, toads and songbirds that feed on insects. And thus the whole fascinating play of predator and prey are woven together in the web of life. Rishi Valley now has fifty species of butterflies and perhaps an equal number of moths. Blue Mormons were a rare sight only three years ago. Now this second largest butterfly in peninsular India sails across campus in increasing numbers, alighting without discrimination on any flower that offers its nectar to the aristocrat among newcomers. The Common Banded Peacock, a species that is no longer very common, has also established itself here.

So far, students and teachers have identified ten species of wasps. A large Hornet species chose to build a spectacular nest — almost three feet high and two and a half feet wide — at the front entrance of the Senior Boys' Hostel. At any given time of the day, almost twenty thousand of these creatures could be seen at work — a lesson in industry to every

student who entered or left the hostel. Very soon students stopped playing cricket in the garden out of respect for these creatures who temporarily shared their world. When, after a few months, all these visitors moved away to establish new homes, the empty nest was carefully detached and relocated in the biology laboratory for future generations of students to examine.

The whole area now teems with reptiles of many kinds. Colourful chameleons, looking like miniature dragons, dolefully cross our path as we walk to school. Baby cobras a few inches long find their way onto boxed hedges in the carefully tended gardens and raise their hoods instinctively. Monitor lizards have wandered into the dormitories, to be banished politely to their native grounds. Rat Snakes have been sighted engaging in their dramatic combat dances. During their dance sequence, these normally shy snakes are oblivious of onlookers. Lifting themselves into an erect posture, they intertwine in graceful movements that resemble a mating dance perhaps as much as they do a combat encounter.

The most splendid creatures on campus are two hundred species of birds, which fill the air, announcing their presence. Many of them call to one another throughout the day, and at night Owls and Nightjars take their turn. Seven species of Owls have been identified, along with six kinds of Drongos, five varieties of Shrikes, and five of Bulbuls as well as tiny Warblers, Sunbirds, Larks and Munias. Many types of raptors have been noted, including Harriers, Buzzards, Eagles and Kites. The percolation tank and the thick belt of vegetation that girdles it provide a breeding ground and asylum for Water Hens, Dabchicks, Kingfishers and the newest arrival, Moorhens. As the sun sets over the lake, Dabchicks can be seen with young ones on their back swimming to the shore, while Bee- eaters, Drongos, Egrets and Herons settle down there to roost for the night.

Up on the forested hill one can run across a variety of wild cats. Civets, Jungle Cats and Leopard Cats have all been sighted, as well as large numbers of porcupines. The population of pythons has risen and recently, to our astonishment and delight, a Slender Loris was seen in the thicker part of the woods. We also suspect that bears have returned to the hill.

A survey of the flora on campus revealed three hundred and fifty species of plants, many of which have medicinal properties. Following the

survey a flourishing Herbal Garden has been established on six acres of land. Under the care of an Ayurvedic specialist, it now has two hundred species of bushes and trees which already are beginning to provide medicinal benefits to the local population.

After some years of cultivation, mature Red Sander trees now flourish on the hillside. This endangered species is endemic to a small region of Andhra known as the Nallamalai Forest Range, which includes Tirupati, Cudappah and Kurnool. Several hundred saplings of this valuable species are given annually to local villagers as a means of ensuring its long-term survival.

In 1991, Rishi Valley was declared a Bird Preserve. Since that time, Bird Studies have become an important activity for students. Students keep track of migrant populations, watch out for newcomers and have documented the breeding biology of the Great Horned Owl and Brown Fish Owl. The dependence of Haircrested Drongos on the flowers of Erythrinas, Spathodias and some species of Eucalyptus has been studied and a report on these studies has appeared in the *'Newsletter for Birdwatchers'*. More recently a new Department was created to conduct a Correspondence Course in Ornithology, on a Home Study model, with annual camps for selected students. Young and mature bird watchers from all over the country now participate in this activity, which has been designed to promote the conservation spirit on a wider scale.

Green cover on the campus is now abundant; and nearly all the trees in sight have descended from saplings that were planted by hand. The hillside scrubland now provides local villagers with cut grass and dried wood throughout the year. This gives several hundred families a natural storehouse to help meet their fodder and fuel needs even in dry seasons when the monsoon fails.

Rishi Valley Education Centre, which supports these activities along with a robust Village Education Programme, has its origins in a small residential school that was founded by Sri J. Krishnamurti in the early 1930's. Krishnamurti developed his celebrated doctrine of freedom against the background of an abiding love of nature and a firm commitment to individual responsibility in working towards a better society and protecting our natural heritage.

Courtesy : The Hindu. Reproduced from 'The FOLIO on Wildlife' dated 6th Sept. 98.

From *Birds of Rishi Valley and Renewal of Their Habitats.*

Birth of a Bird Preserve

Rishi Valley is an 'island of serenity amid the turmoil of the world'; for some of us it holds memories of Krishnamurti's presence. Krishnamurti always believed that a religious place ought to be a sanctuary for all forms of life. Rishi Valley was declared a Bird Preserve on July 27, 1991. In establishing a conservation movement at Rishi Valley we are extending the values of his educational thought. Krishnamurti often asked students to examine their attitudes to nature:

"...we must find out for ourselves what is the relationship between nature and each of us. That is part of religion. You may not agree, but consider it, go into it. Have you any relationship with nature, with birds, with the water of that river? All rivers are holy, but getting more and more polluted: you may call it the Ganges, or the Thames, the Nile, the Rhine, the Mississippi, or the Volga. What is your relationship with all that — with the trees, with the birds, with all the living things that we call nature? Aren't we a part of all that? So aren't we the environment?

(On Nature And The Environment, pp. 100-101)

The inspiration for the idea can also be traced to a broadcast given by Mr. Zafar Futehally long ago; he suggested that areas of the country 'that are interesting from the point of view of birds be freed from development' and set aside for educational purposes as 'places of special ornithological interest'.

We began the work of identifying and cataloguing bird species in the valley earnestly in 1990. One of us (S. Rangaswami) had spent several years in the Valley in the late seventies, when a checklist of local birds was first made. But even a superficial survey in 1990 seemed to suggest that the number of bird species had risen in the interval. We formed a team of experts to assist our work and among others were Mr Santharam, a serious student of ornithology, Mr. Praveen Karanth and the late Mr. Papanna, both experienced in the field study of birds, Meanwhile, birdwatching was becoming a popular pastime among large numbers of students. The team of experts and an enthusiastic band of students were

able to identify one hundred and seventy species of birds by March 1993. And, most important of all, we saw the rare and endemic Yellowthroated Bulbul *Pycnonotus xantholaemus* in Rishi Valley. this event was reported to the International Council for Bird Preservation (ICBP) and, as a result, Rishi Valley was included in the Biodiversity Map and Computerized Data base maintained by the Council at its Headquarters in Cambridge, England, as one of the areas in the tropics for global conservation.

In accordance with its charter, the Bird Preserve endeavours to foster in students a spirit of care, concern and co-operation in protecting the purity and richness of our local ecosystem. It encourages the pursuit of birdwatching and bird study along scientific lines. We plan to construct one or two watch towers at vantage points on the hill slopes, for studying diverse aspects of bird life from close quarters. Other activities envisaged are data collection on certain rare local species of birds, and interaction with regional, national and international bodies engaged in the study and protection of birds.

* * *

"It would be cynical if I were to berate or limit the purpose and pleasures of bird watching to just check-lists. In the prevailing conditions of declining habitats today and in the forseeable future, should not the army of birdwatchers in India set out a higher purpose for themselves and also commit themselves to attain it ? The challenge of retaining and maintaining habitats is clearly no longer in the domain of Government agencies. It is time that citizens individually and collectively thought of ways and means to fulfil their Constitutional obligation enshrined in Article 51 A (g). **The vision and execution of an ornithological enterprise (a bird sanctuary) at the late J. Krishnamurti's Rishi Valley School has a good message for positive action by birders in all walks of life everywhere in the country**. *Even in "developed" countries where environmental conditions are comparatively stable, citizen groups often match the good acts of their governments as I notice from the TV coverage of "Nature Conservancy" body in USA on the Discovery Channel.* **That is the kind of effort that birdwatchers must focus upon creating all over India. Is anyone listening ?**

*– **Lt. General Baljit Singh** (Retd.), Ranchi, Bihar.*
From "Newsletter for Birdwatchers - Vol. 37, No. 3, May-June 1997"

RISHI VALLEY SCHOOL

Declaration of RISHI VALLEY as a "PRIVATE BIRD PRESERVE"

We solemnly declare that Rishi Valley shall henceforth be considered as a PRIVATE BIRD PRESERVE under the direct control and supervision of the Management of Rishi Valley School for the purpose of preserving, protecting and enriching the avifaunal wealth, habitat diversity and flora of the Valley as a whole, appreciating their inter-dependence.

We undertake to offer our co-operation for promoting increasing understanding of Rishi Valley's bird life in all its aspects among the Students, Staff and other Residents with the object of bringing them closer to Nature and developing in them an abiding interest in preserving its Beauty and Purity in the light of the Teachings of Krishnaji.

We shall always endeavour to promote a high degree of environmental awareness among all Residents of Rishi Valley and to encourage Bird Study and Birdwatching among students on scientific lines as indicated in the Statement of Aims and Objects of the School's Club for Birdwatchers, attached hereto.

Signed this Twenty Seventh day of July 1991 at Rishi Valley under the Sacred Banyan Tree.

DR. RADHIKA HERZBERGER

PROF. HANS HERZBERGER

S.THEODORE BASKARAN

S. SRIDHAR

MRS. R. THOMAS

M. THOMAS

MRS.TILAKA BASKARAN

S. RANGASWAMI

M.A.HAMID

S. SUNDARAM VIJAYA YELAKU

V.SANTHARAM

K.PRAVEEN KARANTH

DR.A.KUMARASWAMY

DR.S.A.SHIRALI

MRS. GEETHA IYER

KARTHIK SHANKAR

NIVEDITA SCUDDER

N. S. NAIDU

MRS. SUDHA SRIDAR.

SARAH JOHN

Home Study Course in Ornithology

"This course run by the Rishi Valley Education Centre, masterminded by S. Rangaswami has progressed from its fledgling stage and is now ready to soar. A welcome modest corpus has made it possible to reduce the course fees from Rs. 750 to Rs. 600 and to provide 50% fee concession to students of age group 15 to 25 years (Std. X and above), housewives, unemployed persons, Senior Citizens and other deserving cases. I hope our readers will encourage young people round them to join this course and to develop a srious interest in this subject which will enrich their lives in many ways....."

Zafar Futehally, Editor, Newsletter for Birdwatchers, Vol. 38, No. 2, 1998.

Supplement to Lesson on Conservation of Biodiversity

The main causes of loss of biodiversity are habitat destruction, over - harvesting, pollution and introduction of alien species of plants and animals. In 1884 a woman took just one water hyacinth plant from an exhibition in New Orleans and planted it in her backyard in Florida. Within 10 years, the plant spread fast and became a menace. A few weeks are enough for this plant to double its number. It is a menace in many parts in our country also. It has no natural enemies. It can clog aquatic systems and choke other life forms.

Forests, wetlands and wilderness are storehouses of biological diversity. A mature tree in any place provides ecological benefits worth several lakhs of rupees. This has been computed in precise terms in the West. These benefits are in the form of oxygen, soil fertility, erosion control, water recycling, shelter and food for diverse forms of life. The same tree, cut and sold as timber may be worth just a few thousands of rupees. The chief ingredients of one fourth of the world's drugs come from plants growing in tropical rain forests.We have so far tapped only one percent of forest plants to meet human needs like food, fibre and drugs. 99% yet remains to be explored and examined. But these forests are being destroyed at such a fast pace that one quarter or more of earth's species

will vanish within the next 50 years (Edward O Wilson and Paul Ehrlich). The loss is as serious as burning down an ancient library even before reading its books.

Growing on a large scale in open lands fast-growing fuel trees like subabul, acacias etc. (social forestry as it is called) and recycling waste paper can reduce clearance of forests as well as air pollution and use of water. According to an estimate, recycling Sunday newspapers in USA alone would save 500,000 trees each week in a forest.

Areas of wilderness need to be protected from human interference on high priority. These are areas free from pollution, noise and stress. Their flora and fauna contribute to the biodiversity of the world. They have a unique ecological value besides their beauty and purity. They act as lung spaces in fast expanding human settlements. Instead of receiving protection, they attract the gaze of hawk-like developers including government agencies.

Most people view wildlife in terms of human needs (anthropocentric). We must recognize the right of every form of wildlife to exist, a right equal to that of every other species. This is the biocentric view. There is yet another, equally important view-the ecocentric view. Protection of a few species alone will not do. Entire ecosystems will have to be saved from human intervention so that the biodiversity in them is left unharmed. This is a combination of biocentric and ecocentric views known as the sustainable-earth viewpoint.

In the light of all the points explained so far, let us consider what can we do as individuals to contribute to biodiversity protection. Here are some steps worth considering. The reader can add his or her own to these.

Make attempts to improve your own
surroundings, be it of the house
or the school or the office. It can even be
your backyard.
Refrain from buying products made from animal derivatives
like fur, ivory, reptile skin or tortoise shell.
Do not have a fancy for keeping exotic birds, fish or other pets.
It only encourages poachers and smugglers.

Minimise use of throwaway items. Make efforts to recycle and reuse, in order to reduce waste and habitat damage.

Participate actively in movements which strive at protecting animals and promoting kindness to them.

Be a regular reader of literature dealing with environmental issues and wildlife protection in order to keep yourself well-informed of happenings all over the world. If you can afford, try to subscribe to some of them. Some titles suggested are : Down to Earth; WWF India Newsletter; Newsletter for Birdwatchers; BNHS Journal "Hornbill"; Sanctuary Asia (also Cub); Animal Friend.

Join local Nature Clubs, Birdwatchers' Clubs etc. and participate in their meetings and outings regularly. Form study-circles which promote meetings and discussions relating to conservation of nature and wildlife.

"Far too much of civilised mankind today is alienated from nature, most people seldom encounter anything but lifeless, man-made things in their daily lives and have lost the capacity to understand living things or to interact with them. That loss helps to explain why mankind as a whole exhibits such vandalism towards the living world of nature that surrounds us. It is an important and worthy undertaking to try to restore the lost contact between human beings and the other living organisms of the planet. In the final analysis the success or failure of such a venture will determine whether or not mankind destroys itself along with all other living beings on earth".

– Konrad Lorenz
in "The Year of the Greylag Goose"

Supplement to Lesson on Field Ornithology

The Birdwatcher, at the dawn of the 21st Century is a resolute, dedicated student of birds, ready to go any where any time for four very good reasons.

- to add to his or her checklist of birds viewed and make it a life-list.
- to see new places, parks & sanctuaries, far and near, in pursuit of birds
- to commune with nature & enjoy himself or herself while doing so
- to contribute to knowledge of birds.

This is "birding with a purpose" and many have followed this throughout their lives. Dr. Benton Basham, an anaesthesiologist of Tennessee USA has a life-list of 8,231; he calls himself "one of the hard-hitters in the birding world".

Phoebe Snetsinger of St. Louis, Missouri, USA, a former teacher and mother of four, is a birder universally recognized as the world champion. She has seen and recorded in her life-list more than 7,850 different species of birds (out of the presumed world total 9,000). Twenty years ago she was diagnosed as a cancer patient and had some recurrences. She continues her tryst with birds. "I am using the time to do what I really love to do."

The US Fish and Wildlife Service estimates that
eight million people move across states searching for new birds;
nearly twenty five million people travel a mile or so to add to their list;
fifty one million people are interested enough to watch birds in their backyards or in parks.

Birdwatching, or birding for short, is a pastime that is fast becoming global.

In our view, the pursuit of birds draws us close to the source of life and lets us experience that deep-seated yearning in us to be at one with the universal. Birds are the symbols of the aspirations deeply implanted in our consciousness - aspiration to freedom and to ascend to greater heights. Above all there is the mystery of bird migration - a mystery that ever remains so. As the "Light of Asia" by Edwin Arnold says

Veil after veil is rent,
Veil after veil remains.

Supplement to Lesson on Deep Ecology

'Let us Honour the Ants'

Go *to the ant, thou sluggard; consider her ways and be wise,* says the Book of Proverbs (6:6) in the Holy Bible. Solomon thus praised the harvester ants for the industry they display in gathering seeds and storing the excess bounty in underground granaries. Several great men of antiquity like Hesiod, Plutarch, Horace, Virgil, Ovid and Pliny have alluded to ants and their ways.

In recent years enormous research has been carried out and new combinations of mutualistic support between diverse species of ants and plants have come to light. Edward O. Wilson and Bert Hölldobler have together devoted the best part of their lives to the study of ants. They view the earth itself as a network of ant colonies. Ants have been around for 100 million years whereas humans have been around for about two million years. According to them, at any given moment, there are a million billion ants in the world. In their considered view nothing would happen to the world if all humanity were to disappear. Life would continue to flourish unaffected by such absence. Mass extinctions of species and ecosystems will cease and biodiversity will expand. But if all the ants somehow disappeared, the effect would exactly be the opposite and catastrophic. Hence their appeal "*Let us not despise the lowly ants but honour them*".

Krishanaji in fact 'honoured' the 'lowly' ants some three decades back by writing nearly 25 lines on them while dealing with the "Importance of Change" in human affairs in his *Commentaries on Living* (Third Series Page. 190). It is beyond our imagination why he chose the ants and to describe their behaviour in great detail after carefully observing them probably for hours when biodiversity and ecology were not the "mantras" that they are now. Krishnaji's love and admiration for all life forms, whether it is the firefly or the glowworm, the leaping frog or the hooting owl, have few parallels in the teachings of religious thinkers. The only other saint we can think of is St. Francis of Assisi (1182-1226) described by Bertrand Russell as the most lovable man known to history who loved all living things.

Krishnaji observes:

"The large black ants had made a path through the grass, across a stretch of sand, over a pile of rubble and through the gap in an ancient wall. A little beyond the wall was a hole which was their home. There was an extraordinary coming and going on that path, an incessant bustle in both directions. Each ant would hesitate a second as it went by another. Their heads would touch and only they would go again. There must have been thousands of them .... when you gently knocked on the ground nearby, there was a general scramble. They would pour out of the hole, looking for the aggressor; but soon they would settle down and resume their work. ..... they went along the path for quite a distance, hunting, and they would find many things; the leg of a grasshopper, a dead frog, the remains of a bird, a half-eaten lizard or some grain. Everything was attacked with fury; what couldn't be carried away was eaten on the spot, or taken home in pieces. If you put your finger on their path, they would feel all around the tip, and a few would climb up it, only to come down again ....."

Such was Krishnaji's interest in and concern for all things living even while offering his 'Commentaries On Living' . He says, "Humans should learn to live in harmony with creatures that share this planet with us". He goes even beyond this viewpoint later when he states:" "If you lose touch with nature, you lose touch with humanity. If there is no relationship with nature then you become a killer. Then you will kill baby seals, whales, dolphins and man, either for gain, for sport, for food or for knowledge".

Krishnaji advocated and practised decades back all that "deep ecology" signifies today. Alisdair Coyne, Landscape Gardener and Environmentalist at Ojai, California has said that Krishnaji would not like removing even the seedlings germinating around the garden and say "Leave it, leave it". Mr Coyne says further that his favourite comment from Krishnaji's is when he said "You can learn much more from nature than from the speaker". In his book *Freedom From the Known* he narrates a story. "There is the story of a religious teacher who used to talk every morning to his disciples. One morning he got on to the platform and was just about to begin when a little bird came and sat on the window sill and

began to sing, and sang away with full heart. Then it stopped and flew away and the teacher said. 'The sermon for this morning is over.' "

Krishnaji's perceptive comments on birds can be seen in *Birds of Rishi Valley and Renewal of Their Habitats* - a book recommended for study for students of the Home Study Course. Here is one more on the hummingbird :

"There is a hummingbird going from flower to flower, brightness in the quiet light, with such vitality in that little thing. The rapidity of the wings, so fantastically rhythmical, steady, it seems it can move forward and backward. It is a marvellous thing to watch it, to feel the delicacy, the bright colour and wonder at its beauty, so small, so rapid and so quickly gone."

The Meaning of Birds

The appeal of birds is not something one may expect to sum up succinctly. In a sense, the whole literature of ornithology is addressed to the problem of explaining this appeal.

To begin with, there is something stirring in the very idea of birds, of the freedom of mastery of the air allows, of the exalted perspective that flight affords, of the vast distances birds travel.

The appeal of birds lies in their incomparably vivid representation of life, quickening our loftiest compulsions and experiencing that yearning to be at one with the universal.

The meaning that birds have for us increases with the depth and precision of our knowledge.

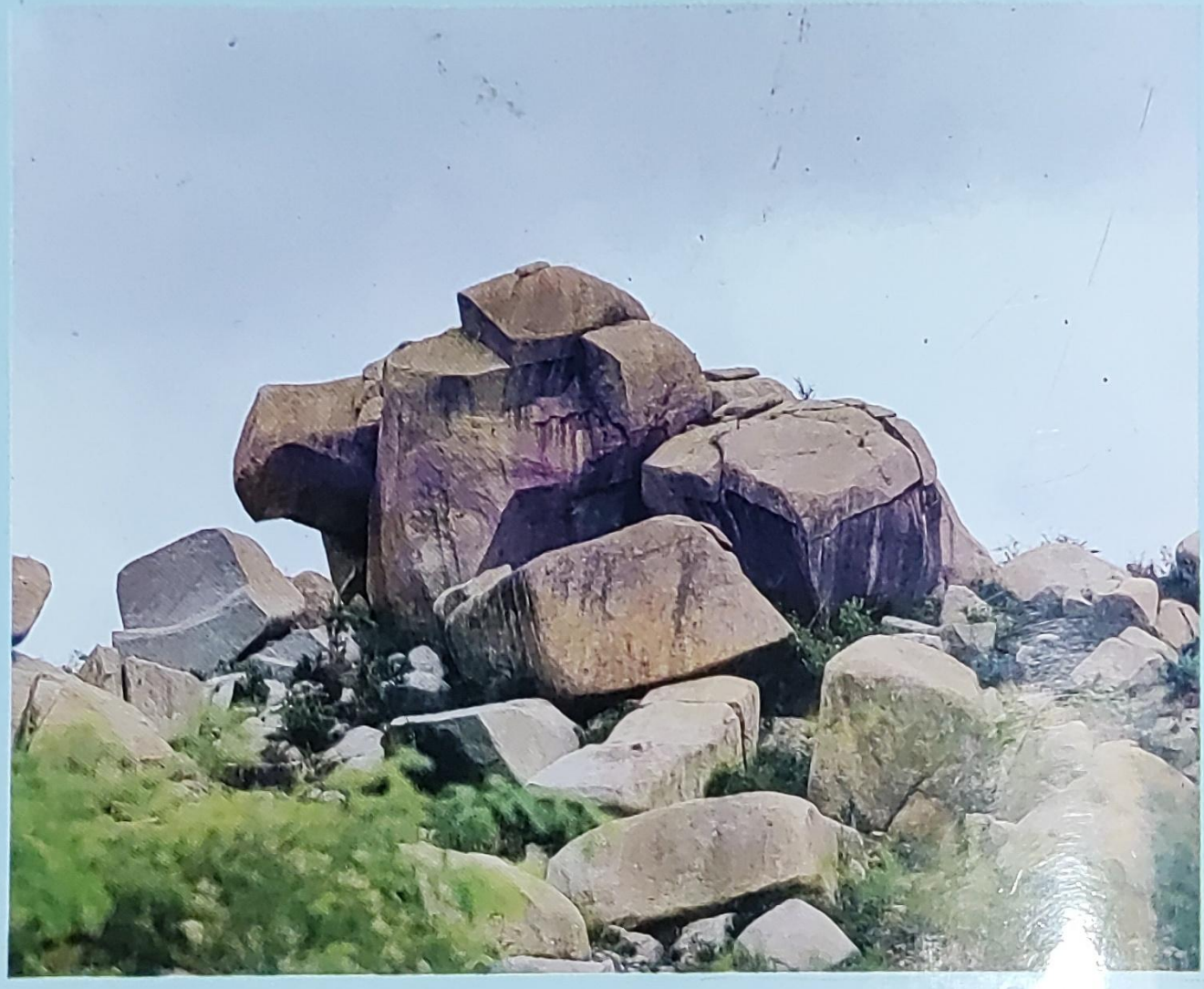
Charlton Oghburn. Jr.

R.R. Chari

Shri B. Vijayaraghavan planting a sapling

R.R. Chari

Dr. Vandana Shiva planting a sapling



R.R. Chari

Lion Rock guarding the entrance to the Valley

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